MATAMSON, E.

cA

Mechanism of the production of lyophobic sols by high-molecular-weight compounds. B. N. Natanson. *Doklady Akad. Nauk S.S.S.R.* 76, 517-19 (1951); cf. *C.A.* 45, 6873a. — It was noted in ultramicroscopic studies of lyophobic sols (e.g. W) protected by lyophilic colloids of high-mol.-wt. compds. (e.g. 1 part rubber or ethylcellulose per 4-40 parts W) that the particle motions differ greatly from the usual chaotic motion observed in lyophobic sols. Instead there are orderly patterns of primary groups of from 3 to 6 or 7 particles, which presumably are connected by the action of the polymer mols. Similar aggregates were observed in electron-microscopic studies of these sols.

H. K. Livingston

1. DUMANSKIY, A.V.; NATANSON, YE.M.; NEKRAYACH, YE.F.

2. USSR (600)

4. Colloids

7. The second All-Union Conference on colloid chemistry in Kiev, June 13-18, 1950.
    (Problems of structure formation and solvation.) A.V. Dumanskiy, YE.M. Natanson,
    YE.F. Nekryach, Ukr.khim.zhur. 16 no. 6, 1951.

9. Monthly List of Russian Accessions, Library of Congress, ___APRIL___ 1953, Uncl.

1. NATANSON, YE.M.; DERYUGIN, I.A.;

2. USSR (600)

4. Colloids

7. Investigations of tungsten and molybdenum organosols with an electron microscope,
   YE.M. Natanson, I.A. Deryugin, Ukr.khim.zhur. 17 no. 6, 1951.

9. Monthly List of Russian Accessions, Library of Congress, __APRIL_____ 1953, Uncl.

NATANSON, E. M.

Chemical Abst.
Vol. 48
Apr. 10, 1954
General and Physical Chemistry

Electron-microscopic study of aquasols of tungsten and molybdenum. E. M. Natanson, and I. A. Dorovyan. Ukrain. Khim. Zhur. 17, 661-71 (1951)(in Russian); cf. C.A. 44, 8598.—The W and Mo sols in aq. gelatin soln. or in toluene (pure or contg. gelatin or α-hydroxyquinoline) had particles chiefly of 300-600 A. in diam. Sols of W and Mo protected by rubber, ethylcellulose, or gelatin, on drying out, formed chains of particles.   J. J. Bikerman

NATANSON, E. M.

Catalysts

Chem Abs. V48
1-25-54
General & Physical
Chemistry

NATANSON, E. M.

Chemistry - Physical chemistry

1/1 Pub. 116 - 4/20

[illegible author line]

[illegible title: of ... organosols in hydrocarbon media]

20, No. 4, 363 - 369, 1954

The conditions leading to stabilization of Bi-organosols in hydrocarbon media, obtained by the flotation method, are explained. The stabilization of the organosols was determined by their behavior in a field of centrifugal force and during their long-term storage in latent state. The relation, existing between the stability of Bi-organosols in toluene and gasoline media and the existence of an abnormal viscosity, is discussed. [illegible] references 1949-1952. Tables; graphs.

[illegible] Institute of Gen. and Inorgan. Chemistry

May 11, 1953

NATANSON, E.M

Dielectric constants of metallic dispersions. O. D. Kurilenko, E. M. Natanson, and O. H. Barashenkov. Trudy Tekhnol. Inst. Pishch. Prom. im. A. I. Mikoyana 18, 240-2 (1955). —The dielec. consts. of org. solvents with metallic dispersions were studied. Dispersions of chlorben-zene and Hg in lanolin gave larger consts. than those obtained from the Clausius-Mosotti equation. It was concluded that the structure of the surface layers had an important effect on the dielec. consts. observed for the various vol. fractions of the metals.   Alexis I. Kamiof

Electron microscopical investigations of the cathode deposits of dispersed iron. L. A. Doryugin, E. M. Naranson, and N. N. Kumachek. *Nauk. Zapiski Kiiv. Derzhav. Univ. im. T. G. Shevchenka* 14, No. 8, *Zbirnik Fiz. Fak.* No. 7, 223–30(1955).—The described new method of obtaining highly dispersed Fe powder, deposited on the cathode, uses an ice-cooled 2-layers electrolytic bath. The lower layer consists of 9% aq. FeCl₃. The upper layer consists of a 0.01M oleic acid in xylene. The anode, in form of a cone, open at the upper end, is immersed in the FeCl₃ soln., and is sepd. from the cathode by a porous diaphragm. The rotating cathode is a vertical cylinder, placed above the anode. The lower surface of the cathode, immersed in the oleic acid-xylene soln., just touches the lower FeCl₃ soln. Owing to the rotation of the cathode, the deposited Fe particles are continuously washed off, and its surface is continuously covered with a surface-active adsorption layer, causing a strong polarization of the cathode. The c.d. varied from 4.3 to 32.4 amp./sq. dm. The dispersion interval of the Fe particles was, correspondingly, 2–3 to 0.05–0.2 μ. The dispersed particles were investigated with an electron microscope EMC-2A with a resolving power of 110–120 A. at a 5000-fold magnification. High rotation speed of the cathode and low temp. of the bath promote the formation of finer particles.   E. Ryshkewitch.

NATANSON, E. M.

NATANSON, E. M.

Method of analysis of sulfuryl chloride-chlorosulfonic acid-sulfuric anhydride system. E. M. Natanson, A. A. Shokol, and A. S. Rabinovich. Zavedskaya Lab. 21, 1140-43(1955).—The method is based on the ClSO₃H and SO₃ reacting with dry alkalies and metal oxides, as well as with some anhydrous salts, while SO₂Cl₂ does not react in the absence of moisture. To det. S and Cl, put a sample in a fused glass tube into a 0.1N NaOH soln., break the ampul, and det. Cl and total S in the usual way. Det. the S as ClSO₃H and SO₃ by placing an ampul with the ternary mixt. into NaH₂PO₄ + KCl dried to 130–5°, in proportion 1 g. of the mixt. to 1-g. sample, in a glass cylinder with a glass stopper, break the ampul with the sample, shake the mixt. for 15–20 min., and let stand, preferably over night. Add 50 ml. of pure CHCl₃ to the cylinder, agitate for 10–15 min., and keep in a drying oven with the cylinder open, for 1 hr. at 110–20°. Transf. the dry residue to a measuring flask, and det. Cl and S in the usual way. W. M. Shimman.
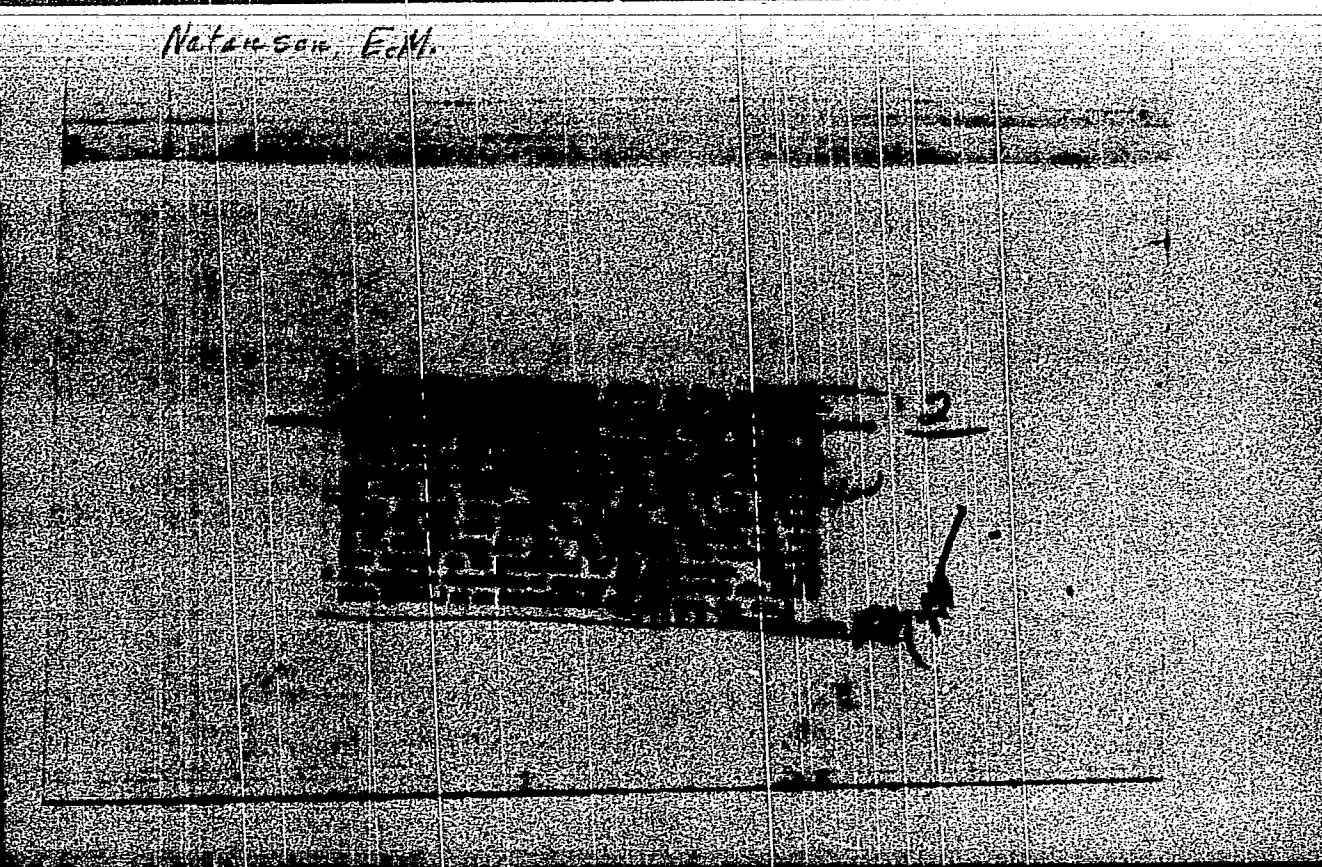
Natanson, E. M

Lubricants. M. L. Barabash and E. M. Natanson. U.S.S.R. 104,008, Oct. 26, 1956. To improve the lubricating properties of lubricants, such as "ai ytol" and "Solidol," 1.5-2.0% is added. of an org. sol. of te obtained as outlined in U.S.S.R. 53,852 (C.A. 35, 1827) and U.S. S.R. 8,608.   M. Hazel.

Natanson E.M.

NATANSON, E. M.

Stability of metal sols in the presence of high molecular compounds. E. M. Natanson and N. N. Kozachek. *Izvest. Akad. Nauk Ukr. S.S.R. [Dey.?] Khim. Nauk* 18.—'54 (1954)(?), cf. *C.A.* 50, 10378f.—The viscosity of 0.0[1]4% rubber solns. in xylene was slightly lowered by 0.05–0.1% colloidal Pt because some pptn. occurred, but the dependence of oil shearing stress was[.?] altered by Pt; this dependence was studied in a rolling ball instrument whose tilt could be changed from 1 to 70°. The rubber solns. in xylene was raised by Pt. The rubber solns. had no yield stress, but this appeared on introducing Pt. Only sols contg. >1.2% rubber and <0.8% Pt were stable for more than 24 hrs. Colloidal Pt (0.00[6]%) increased [?]of 0.6% alk. agar soln. and imparted a yield stress to it.

J. J. Dickerman

BARABASH, M.L.; VAL'CHUK, G.I.; NATANSON, R.M.

Effect of metal colloidal lubricants on the wear and friction coefficient of some materials. Sbor.trud.Inst.stroi.AN URSR no.22: 100-109 '56.   (MLRA 10:5)

(Mechanical wear) (Lubrication and Lubricants)
(Friction)

NATANSON, E.M.
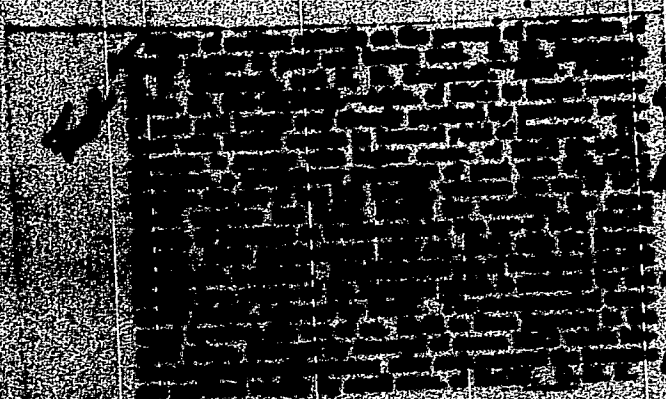
NATANSON, E.M.

Electron-microscope and x-ray studies of the disperse phases of the aquosol of lead-tin alloy. R. M. Natanson, V. P. Chalyi, N. N. Kozachek, and A. P. Kaban (Univ. Sch., Inorg. Chem., Acad. Sci. Ukr. S.S.R., Kiev). Kolloid. Zhur. 19, 318-23(1957); cf. C.A. 50, 9184d.—When an aq. soln. of a Pb and a Sn salt is overlaid with an org. liquid in which the cathode is immersed, and electrolyzed, the Pb is deposited as dendritic crystals and Sn as amorphous particles. At a const. Pb/Sn ratio in the soln., the concn. of Sn in the deposit usually increased with c.d. (3-30 amp./sq. dm.); at c.d. of 10, e.g., this concn. was 84% and 25%, resp., when this ratio was 1:7 and 3:1. The Pb deposit consisted of crystals of 308 A. with the lattice spacing of 1.938 A.   I. J. Bikerman

KATALBOH, Emil' Markovich, doktor khimicheskikh nauk; DUMANSKIY, A.V., akademik, otvetstvennyy redaktor; LABINOVA, N.M., redaktor izdatel'stva; ZHUKOVSKIY, A.D., tekhnicheskiy redaktor

[Extrafine powdered metals and their uses] Sverkhtonkie poroshki metallov i ikh primenenie. Kiev, Izd-vo Akad.nauk USSR, 1957. 62 p.   (MIRA 10:7)

1. Akademiya nauk USSR (for Dumanskiy)
        (Powder metallurgy)

NATANSON, B. M.

Antifriction properties of the disperse phase of metals. M. L. Barabash and B. M. Natanson (Inst. Gen. and Inorg. Chem., Acad. Sci. Ukr. S.S.R., Kiev). Kolloid. Zhur. 19, 34-40(1957).—Suspensions of metals in lubricating oils were prepd. by electrolysis of the corresponding metal salts in an aq. soln. overlaid with oil; the cathode was placed in the H$_2$O-oil interface and was agitated to transfer the metal particles into the oil. Two large-scale (1100-amp.) app. for this electrolysis are described. The suspensions were tested in a machine in which sliding of one metal over another one was interrupted and resumed a times/hr. The wear U was proportional to n between $n =$ 10 and 60, but n had only a slight effect between 60 and 100. U was lower for oil contg. metal particles, as compared with the oil alone, in the case of bronze, gray cast iron (I), or sintered Fe powder (II) sliding over steel (III), or II sliding over I. At $n = 20$, 2% Fe in a lubricant reduced U by 50% at pressures above 60 kg./sq. cm., and velocities of 0.7-8 m./sec. for II rubbing against I. Colloidal Fe and graphite in another oil increased U for III sliding over cast iron (IV), while colloidal Bi slightly reduced U. The effect of metals on the coeff. of friction depended on pressure. Colloidal brass decreased the friction between III and IV. U of bus trolleys and street-car contacts sliding along the live rail was lowered by one-half by means of colloidal metals.

J. J. Bikerman

NATANSON, E. M.

The general principles of the formation of organosol of metal alloys at a cathode in a two-layer bath. E. M. Natanson and N. N. Kozachek (Inst. Gen. and Inorg. Chem., Acad. Sci. Ukr. S.S.R., Kiev). Kolloid, Zhur. 19, 688-701(1957); cf. C.A. 51, 15211d.—Alloys were deposited at a cathode rotating in the boundary between an aq. soln. and a soln. of oleic acid or an oleate + octanol in toluene or a similar hydrocarbon. When the aq. soln. was a mixt. of

NATANSON, E. M.; LEVICH, V. G.; KREMENEV, L. Ya.; TAUBMAN, A. B.;

"The resistance of emulsions and suspensions in connection with the stabilizing action of structure-mechanical properties of protective surface layers."

report presented at the Fourth All-Union Conference in Colloidal Chemistry Tbilisi, Georgian SSR, 2-11 May 19 (Raised Taubman, A. B.

AUTHOR: Natanson, E.M.   SOV-69-20-5-6/23

TITLE: The Formation and Stability of Metal Sols (Obrazovaniye i
               ustoychivost' zoley metallov)

PERIODICAL: Kolloidnyy zhurnal, 1958, Vol XX, Nr 5, pp 556-562 (USSR)

ABSTRACT: The disperse phases of many metal sols have very valuable
               catalytic pyrophoric, lubricating, anti-detonation, and
               ferro-magnetic properties. They are therefore widely used
               in the chemical, electrotechnical, radiotechnical industries,
               in machine-building, etc. Metal sols are very unstable and
               cannot be produced in concentrations higher than 0.1 -
               0.2% without a stabilizer. The production of sols by means
               of colloid mills has shown that only highly-dispersed sus-
               pensions are obtained. The percentage of colloidal frac-
               tions is insignificant. The investigation of metal disper-
               sions has demonstrated that macroscopic particles are not
               dispersed in a liquid medium by ultra-sound. Tungsten,
               molybdenum, Zirconium, etc. may be dispersed by powdering
               them and treating them with various acid and alkali solu-
               tions. Some other methods are also discussed in the art-
               icle. The electrolytic method developed by the author
               /Ref. 1/ consists in the reduction of ions on the cathode
Card 1/3   with the following formation of metallic organosols. Among

The Formation and Stability of Metal Sols   SOV-69-20-5-6/23

the factors which determine the size and structure of col-
loidal particles produced by the electrolytical method, po-
larization of the cathode and the compactness of the cur-
rent are most important. Figure 2 shows the curves of ca-
thode polarization during the formation of lead-tin alloy.
In the formation of colloid particles by the electrolytic
method, a leading role is played by the electrocapillar in-
fluence of polarization /Ref. 10/. The stability of metal
sols is characterized by the bonds of the adsorbed surface-
active substances with the surface of colloidal particles,
their interaction with the medium, and with the macromole-
cules of the stabilizers. It has been demonstrated that
the surface-active substances form chemically fixed adsorp-
tion layers on the particles. A criterium for the stabi-
lity of hydro- and organo-sols is the presence of struc-
turized adsorption-solvate layers on the surface of colloid

Card 2/3   particles. There is 1 diagram, 1 graph, and 15 references,

SOV-69-20-5-6/23

The Formation and Stability of Metal Sols

       10 of which are Soviet, 3 German, and 1 French

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR,Kiyev
               (Institute of General and Inorganic Chemistry of the Ukr
               SSR Academy of Sciences, Kiyev)

SUBMITTED: May 19, 1958

            1. Metal--Colloids   2. Colloids--Production   3. Colloids
            --Properties   4. Electrolysis--Applications

Card 3/3

NATANSON, E.M.; KABAN, A.P.

Electron microscopic analysis of the dispersed phases of organic
iron. Ukr. khim. zhur. 24 no.3:404-408 '58.   (MIRA 11:9)

1.Institut obshchey i neorganicheskoy khimii AN USSR.
   (Iron) (Colloids)   (Electron microscopy)

NATANSIN, E.M.

L 33221-65   EPF(c)/EWT(m)/EPR/EWP(j)   Pc-4/Pr-4/Ps-4   RM/WW
ACCESSION NR: AP5004743   S/0069/65/027/001/0070/0076

AUTHORS: Natanson, E. M.; Chernogorenko, V. B.; Poletova, V. N.

TITLE: Interaction of natural rubber and polyisobutylene macromolecules with highly dispersed iron particles at the instant of their deposition at the cathode

SOURCE: Kolloidnyy zhurnal, v. 27, no. 1, 1965, 70-76

TOPIC TAGS: metallopolymer, natural rubber, polyisobutylene, colloidal iron, aromatic solvent, electrolyzer, iron chloride, desorption, swelling kinetics, electric conductivity, rubber iron gel

ABSTRACT: Results obtained in a study of interactions between 0.5% aromatic solutions of rubber and polyisobutylene with 5% aqueous iron chloride in an electrolyzer at cathodic current densities of 5 a/dm² are reported. The products of reaction are .... Their iron content ranges up to 60%, and they were found to

black and rubberlike. Their iron content ranges up to 60%, and they were found to break up into powders at higher iron contents. The strong bond between metallic surfaces and macromolecules was examined by desorption with toluene (repeated extraction in shakers and centrifugation). The results of desorption are shown in Fig. 1 on the Enclosure. Increasing of iron contents was found to reduce swelling which disappears completely in compounds with 82% iron. The bonds are also strongest at 82% iron content. An increase in electric conductivity caused by the

Card 1/3

L 33221-65
ACCESSION NR: AP5004743

incorporated dispersed iron was noted. The properties of the rubber changed substantially after the reaction with colloidal iron. Orig. art. has: 4 figures.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii, AN UkrSSR, Kiev (Institute of General and Inorganic Chemistry, AN UkrSSR)

SUBMITTED: 10Apr63   ENCL: 01   SUB CODE: GC

NO REF SOV: 014   OTHER: 000

Card 2/3

L 33221-65

ACCESSION NR: AP5004743   ENCLOSURE: 01
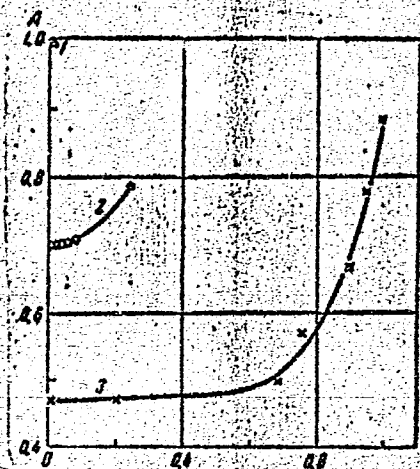
Fig. 1. Toluene desorption of rubbers from the interaction products containing: 1- natural rubber and 82% of iron; 2- natural rubber and 2% of iron: polyisobutylene and 4% of

5(1)   PHASE I BOOK EXPLOITATION   SOV/2689

Natanson, Emil' Markovich

Kolloidnyye metally (Colloid Metals) Kiyev, Izd-vo AN UkrSSR, 1959. 344 p.
  Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut obshchey neorganicheskoy
  khimii.

Ed.: A,V. Dumanskiy, Academician, Ukrainian SSR Academy of Sciences; Eds. of Pub-
  lishing House: Z.S. Pokrovskaya and A.F. Mel'nik; Tech. Ed.: I.D. Milekhin.

PURPOSE: This book is intended for scientists, engineers, and technicians working
  in powder metallurgy in the chemical industries, electrical engineering, radio
  engineering, machine building, and other branches of industry. It may also be use-
  ful to aspirants and students of advanced chemistry courses.

COVERAGE: The book presents the results of research done by the author over a period
  of several years on the formation of colloidal particles of metals and their alloys.
  The author gives the general concepts of particle structure and the properties of
  colloidal metals. He discusses the theoretical bases of modern methods for their

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Colloid Metals   SOV/2689

   preparation in powder form and in various media. There are 415 references:
   259 Soviet, 156 Western.

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PART III.   STABILITY OF METAL SOLS

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    1. Conditions for the formation of stabilizing solvate layers
        at the surface of metal-sol particles. 2. Adsorption of
        surfactants on surfaces of tungsten, molybdenum, and zirconium
        colloidal particles in hydrocarbon media. 3. Heat of adsorption
        of surfactants on disperse-phase metal organosols. 4. Heat of
        wetting of the disperse phases of metal organosols. 5. Coagulation
        of metal organosols in toluene upon contact with aqueous media.
        6. Effect of storage conditions on the stability of metal organosols
        in hydrocarbon media. 7. Dielectric properties of metal organosols.
        8. Use of protective high-molecular-weight compounds for the prep-
        aration of stable metal organsols. 9. Stability of metal organosols
        in polar organic media.

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Colloid Metals   SOV/2689

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Colloid Metals   SOV/2689

2. Antifriction properties of the disperse phases of metal sols.
3. Magnetic properties of the disperse phases of metal and alloy sols. 4.
   Use of highly-dispersed metal powders in the machine-building in-
   dustry. 5. Anticorrosive highly-dispersed metal powders. 6. Com-
   pounding properties of the disperse phase of metal sols upon contact
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Ch. II. Application of Colloid Metals in Biology. Medicinal Properties
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AVAILABLE: Library of Congress

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NATANSON, E. M.

"The Preparation and the Properties of Concentrated Metal Salts."

report presented at the Section on Colloid Chemistry, VIII Mendeleyev Conference of
General and Applied Chemistry, Moscow, 16-23 March 1959.
(Koll. Zhur. v. 21, No. 4, pp. 509-511)

5(2)

SOV/?1-?1-4-19/27

AUTHORS: Nekryach, Ye F. and Natanson, E.M.

TITLE: A Study of the Coagulation of Sodium Humate Solutions

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1959, Nr 4, pp 400-402 (USSR)

ABSTRACT: The increased need in sodium humate solutions used for stabilization of clay suspensions in drilling for oil and natural gas demands that such solutions be produced on a wider industrial basis. The authors conducted a study of this matter by way of coagulating sodium humates from aqueous solutions with the use of sodium chloride, and established the resulting ratios of humate and salt solutions yielding the maximum of sodium humates as sediments. The authors took a water suspension of fine, milled brown coal from the Aleksandriyskoye coal deposits (55% of humic acid, 12% of ash content), mixed it with a concentrate of

Card 1/3   sodium chloride and heated the solution 1-1½ hours at

SOV/ ̶ ̶ ̶ ̶ ̶ ̶ ̶

A Study of the Coagulation of Sodium Humate Solutions

80-90°C. Upon cooling, the residues of brown coal were separated by a centrifuge. The concentration of sodium humate was examined by colorimetry and weighing. The experiments show that the solutions were capable of spontaneous peptization in water without preliminary washing. The authors came to the conclusion that the above-mentioned coagulation method can be used for the production of sodium humate concentrates. Figure 1 shows the changes in amount of humates in the solution after separation of coagulated humates, dependent upon the amount of salt, in 2 types of natural and 3 types of extracted coal.

Card 2/3

A Study of the Coagulation of Sodium Humate Solution

       There are 1 graph and 3 Soviet references.

ASSOCIATION: Institut obshchey i neorg nicheskoy khimii AN UkrSSR
       (Institute of General and Inorganic Chemistry of the
       AS UkrSSR)

PRESENTED: By A.V. Dumanskiy, Member of the AS UkrSSR

SUBMITTED: December 22, 1958

Card 3/3

AUTHORS: Nekryach, Ye.F., Natanson, E.M.   SOV/10-,2-2-2C/56

TITLE: Concentration of Sodium Humate Solutions (Kontsentrirovaniye
               rastvorov gumatov natriya)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol XXXII, Nr 2,
               pp 350-353 (USSR)

ABSTRACT: The production of basic humate solutions in a concentrated form
               is an important problem of lignite mining. The concentration
               may be carried out by removing the excess of water osmotically
               or by evaporation. The addition of sodium chloride to basic
               humate solutions causes their coagulation. After removal of
               the liquid phase from the gel-like precipitates of sodium
               humates their peptisation ability in water without preliminary
               washing has been tested. If 1 volume of saturated salt solu-
               tion is added to 4 volumes of basic humate solution, nearly all
               humates are precipitated. These precipitates peptise spontan-
Card 1/2   eously in water.

Concentration of Sodium Humate Solutions   SOV/80-32-2-20/56

          There is 1 graph, 1 table, and 2 Soviet references.

ASSOCIATION: Institute of General and Inorganic Chemistry of the UkrSSR
                Academy of Sciences   (Institut obshchey i neorganicheskoy
                khimii AN UkrSSR)

SUBMITTED: July 19, 1957

Card 2/2

84673

9.4300 (1043, 1138, 1143)
5.2610   only 1213, 1228, 1043

S/020/60/135/001/026/030
B016/B067

AUTHORS: Natanson, E. M., Kozachek, N. N., and Bushin, V. V.

TITLE: Electrolytic Method of Producing the Highly Disperse
Intermetallic Compound MnBi

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 1, pp. 137-139

TEXT: Intermetallic compounds of many metals are effective semiconductors,
and have valuable magnetic properties, especially in the highly disperse
state. The ferromagnetic properties of manganese-bismuth alloys have long
been known (Ref. 1). They are caused by the formation of the intermetallic
MnBi compound (Ref. 2). The manganese-bismuth alloys which contain a
large amount of MnBi have a high coercive force and other valuable proper-
ties which increase with increasing dispersity of the alloys (Ref. 3).
In the present paper, the authors give the results of investigations made
by applying the electrolytic method in a two-layer bath (Ref. 6). The
lower layer of the bath consisted of a hydrochloric solution of manganese-
and bismuth chloride. The solution contained ammonium chloride (25 g/1)
and urea (30 g/1). The upper layer consisted of a 0.2-0.7% solution of oleic

Card 1/3

84673

Electrolytic Method of Producing the Highly   S/020/60/135/001/026/030
Disperse Intermetallic Compound MnBi   B016/B067

acid in xylene. Fig. 1 shows the MnBi content in the cathode deposit as
a function of the atomic ratio of the components in the electrolyte.
Fig. 2 shows the dependence of this content on the current density. With
the same current density, the ratio manganese : bismuth in the highly dis-
perse cathode alloy deposit of these metals is smaller than in the cor-
responding electrolytes. The disperse cathode manganese-bismuth deposit
was subjected to magnetic separation. In this connection, a small amount
of ferromagnetic fraction was obtained. The presence of glycerin in the
electrolytic bath raised the yield in this fraction (see Table 1), especial-
ly when the atomic ratio manganese : bismuth in the electrolyte was
85 : 15. This ratio was then 1 : 1 in the cathode deposit. Table 2 shows
the results of the X-ray analysis. They indicate that the magnetic frac-
tion of the disperse cathode MnBi deposit consists of metallic Bi, of the
γ-modification of manganese, and of the intermetallic MnBi compound. There
are 1 figure, 2 tables, and 7 references: 4 Soviet, 2 German, and 1 French.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk
               USSR (Institute of General and Inorganic Chemistry of the
               Academy of Sciences, UkrSSR)

Card 2/3

84673

Electrolytic Method of Producing the Highly   S/020/60/135/001/026/030
Disperse Intermetallic Compound MnBi   B016/B067

PRESENTED: July 18, 1960, by A. N. Frumkin, Academician

SUBMITTED: June 9, 1960

Card 3/3

S/137/62/000/001/064/237
A060/A101

AUTHORS: Natanson, E. M., Bushin, V. V., Shevtsova, A. P.

TITLE: Thermal reduction method for obtaining intermetallic compounds on manganese base

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 41, abstract 1C314 ("Poroshk. metallurgiya," 1961, no. 3, 29-34, English summary).

TEXT: A study was made of the conditions for reducing Bi oxide by metallic Mn at various ratios of the components in the charge. The maximum thermal effect was obtained at the ratio Bi_2O_3 : Mn = 1 : 5. At the same ratio of the components one also observed the maximum output of the magnetic fraction (MnBi), 37.5% The characteristics of the MnBi compound obtained by the manganese thermal reduction method are investigated. H_c turned out to be equal to 700 oersteds. There are 9 references.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 1/1

NATANSON, E.M.; BUSHIN, V.V.; KOZACHEK, N.N.

Conditions for the formation of colloid particles of
intermetallic compounds [with summary in English]. Koll.
zhur. 23 no.4:442-447 Jl-Ag '61.   (MIRA 14:8)

1. Institut obshchey i neorganicheskoy khimii AN USSR,
Laboratoriya kolloidnykh metallov, Kiyev.
    (Manganese--Bismuth alloys) (Colloids)

35607

S/020/62/143/001/022/030
B106/B138

5. Y100

AUTHORS: Natanson, E. M., Bushin, V. V., and Shevtsova, A. F.

TITLE: A manganothermal method for producing the intermetallic compound manganese-bismuth

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 1, 1962, 126 - 129

TEXT: The method involves the thermal reduction of bismuth oxide with highly disperse metallic manganese. Mixtures of pulverized bismuth oxide and manganese powder in various molar proportions $(Bi_2O_3:Mn$ from 2:1 to 1:8) were heated after careful mixing and sifting (200 mesh) in inert atmosphere until the reaction $Bi_2O_3 + 5Mn = 2MnBi + 3MnO + 134$ kcal (1) took place. Typically metallothermal processes like these are designated by the authors manganothermal method. The reaction was carried out in poorly meltable vessels 40 - 50 cm high and 2 - 2.5 cm diameter. The apertures of these vessels were locked by thick-walled rubber tubes with oblique incisions which served as safety valves for the escape of gases during the reaction and isolated the reaction products from atmospheric oxygen. All experiments were carried out in an electric furnace at an

Card 1/3

A manganothermal method for...

S/020/62/143/001/022/030
B106/B138

initial temperature of 600°C and under identical conditions. The error in measurement was ±15°C. It is not possible in the example to calculate the rate of the reduction of bismuth oxide with metallic manganese, because the formation reaction of MnBi coincides with this reaction. The specific heat effects calculated for the reaction $Bi_2O_3 + 3Mn$ = $2Bi + 3MnO$ do not agree with the values obtained experimentally. This is due to the fact that 4 kcal/g mole of heat are liberated in the forma-tion of MnBi. The reaction products were subtly pulverized, sifted, and brought into a rotating magnetic field of a permanent magnet to determine the MnBi yield. The magnetic particles (MnBi) were separated from the nonmagnetic ones and weighed. It was not possible to separate chemically the manganese oxides from the magnetic fraction since the powder lost its magnetic properties when the reaction products were treated with organic acids. Obviously, manganese is also separated from the intermetallic compound when MnO is dissolved in organic acids. The optimum conditions for the formation of MnBi are observed in mixtures with a molar ratio of $Bi_2O_3:Mn = 1:5$ because the yield of the magnetic fraction is a maximum in these cases. Following Eq. (1), the MnBi yield should be 71.5% of the reaction products. The yield in practice is considerably lower, (37.5%)

Card 2/3

A manganothermal method for...

S/020/62/143/001/022/030
B106/B138

since other products (manganese oxides, pure bismuth, eutectic Bi-MnBi) are formed during this reaction. The MnBi powders obtained by the manganothermal method showed the following properties: microhardness = 148 kgf/mm^2 at a load of 50g (determined in a ПМТ-3 (PMT-3)) device. Thermal coefficient of electric resistance = $4.56 \cdot 10^{-3}$. Constants of crystal lattice a = 4.26 Å, c = 6.15 Å. Coercive force = 700 oe. There are 2 figures, 2 tables, and 9 references: 7 Soviet and 2 non-Soviet. The reference to the English-language publication reads as follows: A. Goldmann, G. J. Post, J. Appl. Phys., 30, No. 4, 204 (1959).

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk USSR (Institute of General and Inorganic Chemistry of the Academy of Sciences UkrSSR)

PRESENTED: August 3, 1961, by I. V. Tananayev, Academician

SUBMITTED: July 8, 1961

Card 3/3

L 14452-65   EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EPI(n)-2/EPR/EPA(v)-4/EWP(j)/T/EWP(b)
Pc-4/Pr-4/Ps-4/Pt-10/Pu-4/Pab-10   AFWL/SSD/AEDC(a)/ASD(p)-3   MW/RM/WH
ACCESSION NR: AP4046892   S/0191/64/000/010/0003/0005

AUTHOR: Natanson, E. M.; Khimchenko, Yu. I.; Kharitinich, N. Ya.;
Ul'berg, A. Z.

TITLE: Thermal oxidative degradation of metallic polymers based on
polystyrene

SOURCE: Plasticheskiye massy*, no. 10, 1964, 3-5

TOPIC TAGS: thermal oxidative degradation, oxidative degradation
temperature, differential thermal analysis, thermal stability, metal
polymer, manganese, bismuth, thermogram, surface interaction, chemi-
sorption

ABSTRACT: The presumably inhibiting effect of highly dispersed man-
ganese and bismuth on the thermal oxidative degradation of polystyrene
was investigated by differential thermal analysis, using a photo-
recording pyrometer. Half-gram batches were used for samples. The
construction of the apparatus is schematically presented. A uniform
heat supply was achieved by means of a voltage regulator. With this
apparatus, it is possible to obtain thermograms of the investigated
products in a vacuum, in an inert atmosphere, and in air. Aluminum
Card 1/3

L 14459-65
ACCESSION NR: AP4046892

oxide roasted to 1000C was used as a standard. Measurements were
made in the interval 20—500C at a heating rate of 10C/min, and the
products of the interaction of highly dispersed manganese and bismuth
particles with polystyrene macromolecules were investigated at the
moment of their formation. The molecular weights and yields of the
products were determined. Thermographic results showed the depend-
ence of the oxidative degradation temperature of polystyrene on its
content of highly dispersed manganese and bismuth. From 0.6 to 1.5%
manganese or bismuth increased the oxidative degradation temperature
from 280—285C to 329—337C. The effect of these highly dispersed
metals is explained by the interaction between the surface of their
particles and the isolated monomer units of polystyrene macro-
molecules. The chemisorption of free macroradicals on the surface
of bismuth and manganese particles leads to a more uniform distribu-
tion of metal particles in polystyrene. Homogeneous biphasic systems
called metal polymers are formed. The increase in the oxidative
degradation temperature is due to the decreased mobility of poly-
styrene macromolecules caused by their interaction with metal. Orig.
art. has 5 figures and 1 table.

Card 2/3

L 11457-45
ACCESSION NR: AP4046897

ASSOCIATION: none

SUBMITTED: 00   ENCL: 00

SUB CODE: GC, MT   NO REF SOV: 002   OTHER: 010

0

Card 3/3

L 11291-65   EWT(m)/EPF(c)/EWP(j)/EWP(b)/T/EWP(t)   RC-4/Pr-4   IJP(c)   JD/HM

ACCESSION NR: AP4044548   S/0073/64/030/008/0805/0810

AUTHOR: Natanson, E. M.; Ul'berg, Z. R.

TITLE: Interaction of polystyrene with lead colloidal particles as
they form at the cathode

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 30, no. 8, 1964, 805-810

TOPIC TAGS: polystyrene, colloidal lead, lead filled polystyrene,
electrolytic bath, reduced viscosity, swelling, metallopolymer

ABSTRACT: A study has been made of the formation of products of the
interaction of polystyrene macromolecules with lead colloidal parti-
cles formed by an electrolytic method. The authors note that it is
expedient to introduce the term "metallopolymers" to designate the
new type of material, which is a homogeneous system of colloidal metal
particles and polymer macromolecules and in which the presence of the
colloidal metal has a substantial effect on the physicochemical and
physicomechanical properties of the polymer." The experiments were
conducted with the electrolytic bath shown in Fig. 1 of the Enclosure,
at 6—9C and under various conditions of voltages, current densities,

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L 11291-65
ACCESSION NR: AP4044546

and times. Polystyrene samples containing 5—15% Pb were obtained
whose reduced viscosity (and hence molecular weight) dropped with in-
creasing percentage of lead. The presence of lead did not affect the
degree of swelling of the polystyrene, but increased the rate of
attainment of swelling equilibrium. Orig. art. has: 3 figures and
2 tables.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR
(Institute of General and Inorganic Chemistry, AN USSR)

SUBMITTED: 05Oct63   ATD PRESS: 3108   ENCL: 01

SUB CODE: OC, MT   NO REF SOV: 010   OTHER: 004

Card 2/3
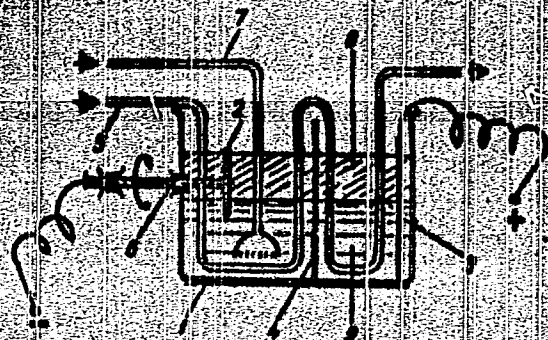
Fig. 1. Electrolytic bath for preparing products
of the interaction of polystyrene macromolecules
with colloidal particles of metals

1 - Electrolytic cell; 2 - rotating cathode;
3 - anode; 4 - diaphragm; 5 - cooling coil;
6 - cathode shaft; 7 - inert gas feed; 8 - solution
of polystyrene in toluene with oleic acid added;
9 - lead formate aqueous solution;

Card 3/3

L 22533-65   EWT(m)/EPF(c)/EPA(w)-2/EWP(j)/T   Pd-4/Pab-10/Pi-4   IM/RM/AW

ACCESSION NR: AP4047950   S/0020/64/158/005/1162/1165

AUTHOR: Natanson, E. M.; Khimchenko, Yu. I.; Shvets, T. M.

TITLE: The mechanism of the reaction of polymers with colloidal metal particles at the moment of their formation on the cathode

SOURCE: AN SSSR. Doklady*, v. 158, no. 5, 1964, 1162-1165

TOPIC TAGS: natural rubber, polyisobutylene, carboxylate rubber, epoxy resin, colloidal iron, polymer colloidal metal reaction, IR spectrum

ABSTRACT: The reaction of polyisobutylene, natural rubber, carboxylate rubber and epoxy resin with colloidal iron particles at the instant of their formation on the cathode was investigated in order to explain the mechanism of the interaction of the polymer with the active surface of the metal particles. IR spectra of the reaction products of polyisobutylene or natural rubber with colloidal iron obtained electrolytically in the presence of oleic acid were the same as spectra of films of the pure polymers, indicating the macromolecules did not contact direct-

Card 1/2

L 22533-65

ACCESSION NR: AP4047950

ly with the surface of the colloidal metal particles but reacted with the oleic acid adsorbed on this surface. In the case of carboxylate rubber and of the epoxy resin the C=O and CH$_2$-CH groups decreased as the colloidal iron concentration increas-
$\backslash$O
ed, indicating reaction similar to chemosorption of the polar fixing group with the colloidal particle surface. These results were confirmed by desorption studies of the polymer-colloidal iron reaction products: polyisobutylene and natural rubber were reversibly adsorbed while the carboxylate rubber and the epoxy were irreversibly adsorbed on the iron particle surface. Orig. art. has: 4 figures

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk UkrSSR (Institute of General and Inorganic Chemistry, Academy of Sciences, UkrSSR)

SUBMITTED: 28Apr64   ENCL: 00
SUB CODE: MT, GC   NO REF SOV: 005   OTHER: 009

Card 2/2

L 14490-66   EWP(e)/EWT(m)/ETC(F)/EWG(m)/EWP(1)/T/EWP(z)/EWP(b)/ETC(m)=6
ACC NR: AT6006232   (A)   IJP(c)   SOURCE CODE: UR/0000/65/000/000/0119/0124
DS/JD/WW/DJ/GS/RM

AUTHOR: Baturova, L. S.; Dmianchenko, N. I.; Ul'berg, Z. R.

ORG: Institute of General and Inorganic Chemistry, AN UkrSSR, Kiev (Institut obshchey i neorganicheskoy khimii AN UkrSSR)

TITLE: Curing of epoxy resins with colloidal lead

SOURCE: AN UkrSSR. Modifikatsiya svoystv polimerov i polimernykh materialov (Modification of the properties of polymers and polymeric materials). Kiev, Naukova dumka, 1965, 119-124

TOPIC TAGS: epoxy resin, colloidal lead, curing organic semiconductor, antifriction material, shielding material

ABSTRACT: A study has been made of the curing of ED-5 epoxy-bisphenol A resin with colloidal lead. Colloidal lead particles were formed in the resin by two methods developed by the authors: 1) electrolysis of aqueous solutions of lead formate in the presence of toluene solutions of the resin, and 2) thermal decomposition of lead formate in the resin. Interaction of polar epoxy groups with active centers on the fresh surface of colloidal lead results in the formation of strongly homogenized, stably aggregated systems. The preparation of systems containing 14 parts by weight of lead by the electrolytic method (1) or 2 to 5% lead by the thermal method (2) are briefly described in the source. Heating of the

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L 14490-66

ACC NR: AR6006252

systems to about 100 causes curing of the resins. Epoxy resins cured with colloidal lead can find widespread application as antifriction, current conductive, and γ-radiation shielding materials. Orig. art. has: 9 figures.

SUB CODE: 11/ SUBM DATE: 06Oct65/ ORIG REF: 004/ OTH REF: 004/ ATD PRESS:
4/99

L 18872-66   EWP(k)/EWT(m)/EWP(e)/EWP(t)   JD

SOURCE CODE: UR/0226/65/000/009/0095/0098

ACC NR: AP7002948

AUTHOR: Chagovets, V. M.; Mikhalyuk, R. V.; Rybchinskiy, M. I.

ORG: Institute of General and Inorganic Chemistry, AN UkrSSR (Institut obshchey i neorganicheskoy khimii AN UkrSSR)

TITLE: Express method of determining dispersity of metal powders

SOURCE: Poroshkovaya metallurgiya, no. 9, 1965, 95-98

TOPIC TAGS: metal powder, chemical dispersion, dispersion hardening, sedimentation separation, metallurgic process

ABSTRACT: Results of an investigation of the dispersity of highly disperse metal powders by means of a photosedimentometer are presented. Comparison with results obtained by independent methods shows good agreement. A rational procedure of selection of the dispersion medium in dispersion analysis of certain metal powders is described. Orig. art. has: 3 figures and 2 tables. [Based on authors' abstract.] [NT]

SUB CODE: 11/   SUBM DATE: 15Feb65/   ORIG REF: 003/   OTH REF: 006/

Card 1/2

NATANSON, E.M.; CHERNOGORENKO, V.B.; POLETOVA, V.N.

Interaction of macromolecules of natural rubber and polyisobutylene
with highly disperse iron particles at the instant of their deposi-
tion on the cathode. Koll. zhur. 27 no.1:70-76 Ja-F '65.

(MIRA 18:3)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR, Kiyev.

L 52722-65   EPA(s)-2/EWT(m)/EPF(c)/EWG(m)/EPA(w)-2/EWP(j)/T   Pc-4/Pab-10/
Pr-4/Pt-7 RWH/WW/RM

ACCESSION NR: AP5014527   UR/0069/65/027/003/0412/0416
                                                     541.183.23

AUTHOR: Natanson, E. M.; Chernogorenko, V. B.; Khilchenko, Yu. I.; Anistratenko, G. A.

TITLE: Interaction of macromolecules of natural rubber and isobutylene with colloidal particles of nickel and cobalt as they are formed at the cathode

SOURCE: Kolloidnyy zhurnal, v. 27, no. 3, 1965, 412-416

TOPIC TAGS: metallopolymer, natural rubber, isobutylene, colloidal nickel, colloidal cobalt, semiconductor, organic semiconductor

ABSTRACT: New "metallopolymers," interaction products of natural rubber and poly-isobutylene with colloidal nickel and cobalt in a two-layer electrolytic bath, were prepared, their optimum preparative conditions determined, and their properties studied. The products were black materials, rubber-like at low metal content and powdery at above 60% metal. With regard to electrical conductivity, the products were dielectrics at low metal concentrations, and quasi-metallic conductors at high (above 80%) metal concentrations. Swelling tests showed that rubber adsorbed di-

Card 1/2

L 52722-65

ACCESSION NR: AP5014527

indicates the high strength of the bond. IR spectra of such rubber, however, did not differ from IR spectra of nonfilled rubber. The experimental results are interpreted in terms of the formation of various types of network structure. Orig. art. has: 1 table and 3 figures.
[SM]

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN UkrSSR, Kiev (Institute of General and Inorganic Chemistry, AN UkrSSR)

SUBMITTED: 02Aug61   ENCL: 00   SUB CODE: OC, IC

NO REF SOV: 007   OTHER: 000   ATD PRESS: 4011

Card 2/2

L 62474-65   EWT(m)/EPF(c)/EWP(j)/T/EWP(t)/EWP(b)   LJP(c)   JD/WH/RM

ACCESSION NR: AP5020229

UR/0069/65/027/004/0373/0577
541.06.092.2/.4

AUTHOR: Natanson, E. M.; Khimchenko, Yu. I.; Ul'barg, Z. R.; Khari-
tinich, N. Ye.

TITLE: The effect of colloidal lead on the thermooxidative degrada-
tion of polystyrene

SOURCE: Kolloidnyy zhurnal, v. 27, no. 4, 1965, 373-377

TOPIC TAGS: polystyrene, thermal degradation, thermal stability,
heat resistant polymer, organometallic polymer

ABSTRACT: The purpose of this work was to show the relationship be-
tween the content of colloidal metal particles in a polymer and its
oxidative degradation temperature. Colloidal lead was introduced
into polystyrene to the extent of 4.5 to 45.53% by two-phase elec-
trolysis, using a rotating cathode. Colloidal lead from the lead
formate bottom phase was introduced into the top phase consisting of
a 2% solution of polystyrene in toluene, containing 0.3% oleic acid.
The dispersed phase was caused to coagulate from the toluene solution

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L 62474-65

ACCESSION NR: AP5020229

3

by the addition of a 2—3-fold excess of methanol. The coagulated
product was dried under vacuum for 20 hr at 80C and then sub-
jected to differential thermal analysis. It was shown that increas-
ing content of colloidal lead in polystyrene results in progressively
rising temperatures of oxidative degradation. The view of some
authors that the presence of fillers leads to lower softening tem-
peratures of polymers is applicable only to systems in which there is
no firm bonding between the macromolecules of the polymer and the
surface of the filler particles. In the polystyrene-colloidal lead
system, on the other hand, a strong molecular lattice interspersed
with colloidal lead particles is formed. Polystyrene macromolecules
become less mobile, with noticeable effect on the softening temperature
and the kinetics of oxidative degradation. An additional explanation
of the observed effect lies in the assumption that the colloidal
metal particles promote the decompositions of hydroperoxides formed in
the course of oxidative degradation. Orig. art. has: 5 figures and
1 table.

[VS]

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN UkrSSR, Kiev
(Institute of General and Inorganic Chemistry, AN UkrSSR)

Card 2/2

E 62474-65

ACCESSION NR: AP5020229

SUBMITTED: 25Oct63

NO REF SOV: 003

ENCL: 00

OTHER: 002

SUB CODE: MT, OC

ATD PRESS: 4072

Card 3/3

L 52719-65   EPA(e)-2/EWT(m)/EPF(c)/EWG(m)/EPA(w)-2/EWP(j)/T   Pc-4/Pab-10/
Pr-4/Pc-7   RWH/WW/RM

ACCESSION NR: AP5014308   UR/0073/65/031/006/0592/0596
                                           67B.046.32

AUTHOR: Natanson, E. M.; Chernogorenko, V. B.; Anistratenko, G. A.

TITLE: Properties of metallopolymers based on epoxy resin and col-
loidal iron

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 31, no. 6, 1965, 592-596

TOPIC TAGS: metallopolymer, colloidal iron, epoxy resin, semiconduc-
tor, organic semiconductor

ABSTRACT: New current-conducting "metallopolymers" (products of the
interaction of polymers with colloidal metals in a two-layer electro-
lytic bath) based on epoxy resin and iron have been prepared and their
electrical conductivity and thermomechanical properties have been
studied. It is noted that metallopolymers can find use as active
fillers, and as current- and heat-conducting, ferromagnetic, and
semiconductor materials. The new metallopolymers (whose preparative
conditions are given in the original article) were prepared either
with or without a surface active agent (oleic acid). To prevent

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L 52719-65

ACCESSION NR: AP5014301

oxidation, which readily occurred, the products were stored in sealed vessels. At 19% Fe, the polymers were black powders. Conductivity was higher with oleic acid than without, e.g., 5×10^{-2} $ohm^{-1}cm^{-1}$ at 79.1% Fe versus 7×10^{-7} $ohm^{-1}cm^{-1}$ at 86.2% Fe. The plot of (log conductivity) versus reciprocal absolute temperature was linear (for the polymer with 86.2% Fe). DTA showed that the presence of colloidal iron raises the temperature of thermal-oxidative degradation of the epoxy resin. DTA also revealed the existence of an optimum degree of filling at which the polymer and filler form a strong network structure. Thermomechanical curves (Fig. 1 of the Enclosure) showed that at above 19% Fe, the polymer loses its viscous-flow properties, apparently owing to the formation of the strong network structure. Orig. art. has: 1 table and 3 figures.   [SM]

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN UkrSSR (Institut of General and Inorganic Chemistry, AN UkrSSR)

SUBMITTED: 02Feb64   ENCL: 01   SUB CODE: OC, IC

NO REF SOV: 007   OTHER: 000   ATD PRESS: 4011

Card 2/3

L 52719-65
ACCESSION NR: AP5014308   ENCLOSURE: 01
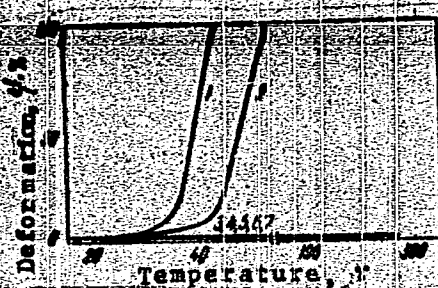
Fig. 1. Thermomechanical curves taken
at a heating rate of 1.3 degree C/min
and $\sigma = 0.84$ kg/cm^2

1 - Epoxy resin; 2, 3, 4 - metallopolymers containing 5.0,
19.0, and 53.2% Fe lyophilized with oleic acid; 5, 6, 7 -
metallopolymers containing 38, 46.2, and 86.2% Fe without
oleic acid.

Card 3/3

KHIMCHENKO, Yu.I.; UL'BERG, Z.R.; PRIKHOD'KO, G.P.; IVANOVA, Ye.I.;
     KABAKCHI, A.M.; MELESHEVICH, A.P.; NATANSON, E.M.

Effect of γ-irradiation on the structure of epoxide resin
and metal polymers based on it. Ukr. khim. zhur. 31 no. 11:
1164-1167 '65   (MIRA 19:1)

1. Institut fizicheskoy khimii imeni Pisarzhevskogo AN UkrSSR
i Institut obshchey i neorganicheskoy khimii AN UkrSSR.

L 37642-66   EWT(m)/EWP(v)/EWP(j)/T   IJP(c)   DS/WW/RM

ACC NR: AP6017100   (A)   SOURCE CODE: UR/0226/66/000/001/0029/0034

AUTHORS: Natanson, E. M.; Khimchenko, Yu. I.; Ul'berg, Z. R.; Shvets, T. M.   49
                                                                                B

ORG: Institute of General and Inorganic Chemistry AN UkrSSR (Institute obshchey i
neorganicheskoy khimii AN UkrSSR)

TITLE: Organometallic polymers based on epoxy-dian resin ED-5 and colloidal lead

SOURCE: Poroshkovaya metallurgiya, no. 1, 1966, 29-33

TOPIC TAGS: organometallic compound, adhesive, organic synthetic process, electro-
chemistry, epoxy resin, epoxy plastic/ED-5 epoxy resin

ABSTRACT: The conditions for and the mechanism of interaction of colloidal lead (I)
and epoxy-dian resin ED-5 (II) to form organometallic polymers were studied. It
was established in a previous work by E. M. Natanson, Yu. I, Khimchenko, and T. M.
Shvets (DAN SSSR(v pechati)) that the adhesive power of the epoxy resin is directly
related to the number of epoxy rings which open upon reacting with the metal.
Organometallic polymers were obtained by the electrolytic method described by E. M.
Natanson (Kolloidnyye metally, Izd-vo AN UkrSSR, K., 1959). The effect of the
current density, concentration of the electrolyte and the polymer, temperature, and
speed of the cathode rotation upon the composition of organometallic polymers was
investigated. It was established by means of infrared spectroscopy that the polar
groups of II react with the surface particles of I at the instant of their appearance

Card 1/2

L 37642-66

ACC NR: AP6017100　　　　　　　　　　　　　　　　　　　　　　　　○

on the cathode, forming chemically fixed adsorption compounds. The presence of I in
II considerably facilitates its setting (see in Fig. 1).
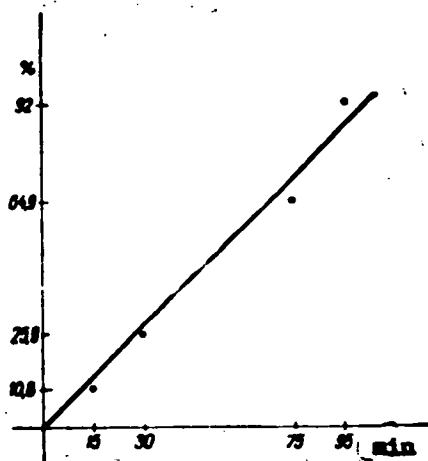
Fig. 1. Kinetics of
the setting process
of epoxy resin.

Orig. art. has: 6 figures.

SUB CODE: 07/　　SUBM DATE: 26Oct65/　　　ORIG REF: 003/　　　OTH REF: 004

Card 2/2　　vmb

L 23193-66   EWT(m)/EWP(j)/T/EWP(t)/ETC(m)-6   IJP(c)   JD/WW/RM

ACC NR: AP6009492   UR/0020/66/167/001/0128/0131

AUTHOR: Raigorodskiy, I.M.; Khinchenko, Yu.I.; Kompaniyets, V.A.

ORG: Institute of General and Inorganic Chemistry, AN UkrSSR (Institut obshchey i neorganicheskoy khimii AN UkrSSR)

TITLE: Metallopolymers based on epoxy resins and colloid copper

SOURCE: AN SSSR. Doklady, v.167, no.1, 1966, 128-131

TOPIC TAGS: polymer chemistry, epoxy plastic, copper compound

ABSTRACT: The starting materials for the experiments were copper formate and ED-5 epoxy resin, in compositions with 5, 10, 20, 30, 40, and 50% copper (calculated as metallic copper). It was established that decomposition of the copper formate occurs at a temperature of 186-190°. The article gives thermograms with differential curves for epoxy resin with different copper contents. At a temperature of 190° (the decomposition temperature of copper formate) there is a well marked exothermic effect, the intensity of which increases with the copper concentration. It was established that the reinforcing of an epoxy resin with colloid copper is accompanied by a decrease in the content of epoxy groups. Thus, the residual content of epoxy groups in the sample with 30% copper,

Card 1/2   UDC: 54-126 + 678.643'42'5

L 23193-66

ACC NR: AP6009492

after heating for 2 hours at 210°, was 16% of the original content. The interreaction of an epoxy resin with colloid copper can lead to the formation of the corresponding macromolecules. Experiments were carried out to explore the possibility of using the method of electron paramagnetic resonance to study the reactions of epoxy resin with colloid copper particles at the moment of their formation, by the thermal method. The investigations were made on a PB1301 apparatus in the temperature interval from 20 to 300°. Based on the results of these experiments, the article gives curves showing the change in the concentration of the radicals formed as a function of temperature, and the kinetics of the formation of the radicals at 230°. Orig. art. has: 3 figures.

SUB CODE: 07/   SUBM DATE: 09Jun65/   ORIG REF: 006/   OTH REF: 005

Card   2/2 DK

L 00724-67   EWT(m)/EWP(j)/T   IJP(c)   RM/WW

ACC NR, AP6024845   SOURCE CODE: UR/0073/66/032/004/0366/0370

AUTHOR: Klochkov, V. P.; Shpigun, A. A.; Ul'berg, Z. R.; Prikhod'ko, G. P.; Ivanova,
Ye. I.; Kabakchi, A. M.; Meleshevich, A. P.; Natanson, E. M.

ORG: Institute of General and Inorganic Chemistry, AN UkrSSR (Institut obshchey i
neorganicheskoy khimii AN UkrSSR)

TITLE: X-ray diffraction study of ED-5 epoxy-diane resin irradiated with Co^{60} gamma
rays and of metallopolymers based on it

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 32, no. 4, 1966, 366-370

TOPIC TAGS: metallopolymer material, epoxy plastic, resin, irradiation effect, gamma
irradiation

ABSTRACT: The effect of gamma irradiation on the molecular structure of ED-5 epoxy-
diane resin and metallopolymers prepared from it and containing from 1 to 6% copper and
5% lead was studied by using a URS-50 I diffractometer and a scintillation method.
The irradiation of purified uncured ED-5 resin and its mixtures with colloidal metals
was carried out on a UK-70 000 unit with a Co^{60} activity corresponding to 70 000 g-eq
of Ra). A distinct structure appeared in the resin as a result of the irradiation:
under the influence of the high-energy radiation, the highly dispersed copper was
found to accelerate the ordering effect in the resin. An appreciable increase in the
degree of crystallinity was produced by the irradiation in the binary system ED-5 + 6%

Card 1/2   UDC: 621.039.55

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ACC NR: AP6024845

copper. The combined influence of gamma radiation and colloidal lead on the structur-
isation of ED-5 and the interaction of the latter with the metal were much less pro-
nounced than in the case of the system containing copper. Orig. art. has: 5 figures,
1 table, and 2 formulas.

SUB CODE: 11/ SUBM DATE: 08Jul64/ ORIG REF: 004/ OTH REF: 002

Card 2/2 afs

NATANSON, G. D.

Chemistry - Atomization
Chemistry - Aerosols

Mar 49

"Rectifying Drops in Atomizing Liquids as a Result
of Fluctuations in the Diffusion of Ions," G. D.
Natanson, Lab on Aerosols, Physicochem Inst Imeni
Karpov, Moscow, 11 pp

"Zhur Fiz Khim" Vol XXIII, No 3

Calculates magnitude of fluctuation charges in liquids
containing ions. Studies experimentally the
electrifying of drops during atomization of liquids
in the concentration range from 1 · 10⁻¹¹ to 3 · 10⁻⁹
N/l for drops of from 0.5 to 2 μ. Results agree with

Chemistry - Atomization (Contd)   Mar 49

fluctuation theory of formation of charges of atomized
drops. Develops new method of nonelectrochemical
determination of concentration of ions (ion strength)
in dielectric liquids on basis of results. Submitted
21 Jun 48.

NATANSON, G. I.

Mathematical Review.
June 1954
Analysis

10-5-54

Leningrad State
Pedagogical Inst.
im A. I. Herzen

Natanson, G. I. On ... of series of Jacobi polynomials summed ... by the method of ... averages. Doklady Akad. Nauk SSSR (N.S.) 92, 229-230 (1953). (Russian)

Let $J_n(x; \alpha, \beta)$ be the nth normed Jacobi polynomial and $a_n = \pi/(2n+\alpha+\beta+1)$, $x_1 = x \cos a_n - (1-x^2)^{\frac{1}{2}} \sin a_n$;
$$x_2 = x \cos a_n + (1-x^2)^{\frac{1}{2}} \sin a_n.$$

Theorem 1. If $(1-x)^{-\alpha}(1+x)^{-\beta}f(x) \in L^2(-1, 1)$ and if $S_n(x)$ is the nth partial sum of the expansion of $f(x)$ in Jacobi polynomials, then $B_n(x) = \frac{1}{2}[S_n(x_1) + S_n(x_2)] \to f(x)$ as $n \to \infty$ at every point of the Lebesgue set of $f(x)$ in $(-1, 1)$. If $f(x)$ is continuous, then $B_n(x)$ tends to $f(x)$ uniformly in $(-1+\epsilon, 1-\epsilon)$. Theorem 2. If the expansion used in Theorem 1 is $f(x) \sim \sum a_n J_n(x; \alpha, \beta)$, then for $|x| < 1$

$$R_n(x) - B_n(x) = \sum_{k=0}^{\infty} a_k J_k(x; \alpha, \beta)$$
$$\times \cos((2k+\alpha+\beta+1)a_n/2) - B_n(x) \to 0.$$

Theorem 3. If the expansion of $f(x)$ is $(C, 1)$-summable, then $R_n(x)$ tends to a limit as $n \to \infty$. Theorem 1 remains true if x_j are replaced by $x_j' = x_j + O(1/n \log n)$ ($j = 1, 2$). Theorem 2 remains valid with $x_j' = x_j + O(n^{-3/2-\epsilon})$ in place of x_j.
                W. H. J. Fuchs (Ithaca, N. Y.).

NATANSON, G. I., Cand Phys-Math Sci -- (diss) "On certain applications
of asymptotic formulas in the design theory of functions." Leningrad,
1957, 8 pp (Leningrad Pedagogical State Institute im A. I. Gertsen),
100 copies (KL, 36-57, 104)

PORTUGAL', V.B.; NATANSON, G.I.; ALEKSEYEVA, V.P.; SMIRNOV, V.I., akademik, red.; CHEBOTAREV, G.A., prof., doktor fiziko-matematicheskikh nauk, otvetstvennyy red.; ZEIDEL' R.Ye., tekhn.red.

[Mathematics and mechanics in the publications of the Academy of Science of the U.S.S.R.; a bibliography] Matematika i mekhanika v izdaniiakh Akademii nauk SSSR; bibliografiia. Sostavili V.B.Portugal', G.I.Natanson, V.P.Alekseyeva. Pod red. V.I.Smirnova. Moskva, Vol.3. 1948-1952. 1957. 361 p.   (MIRA 11:4)

1. Akademiya nauk SSSR. Biblioteka.
        (Bibliography--Mathematics)
        (Bibliography--Mechanics)

i

Natanson, G.I.

ABSTRACT: As is well known, the integral of Denjoy-Khinchin (D^*) is more general than that of Denjoy-Perron (D_*). The authors show that for every $\xi < \Omega$ there always holds $D_\xi \subset D^\xi$, where D_ξ and D^ξ are defined by

$$D_* = \sum_{\xi < \Omega} D_\xi, \quad D^* = \sum_{\xi < \Omega} D^\xi \quad (D_0 \subset D_1 \subset, \ldots \ D^0 \subset D' \subset \ldots).$$

In a certain sense this result is definitive. Finally for $\xi < \Omega$ the relation

$$D^{\xi+1}([a,b]) - \left\{ D_{\xi+1}([a,b]) + D^\xi([a,b]) \right\} \neq 0$$

is proved.
Three Soviet references are quoted.

20-2-8/60

AUTHOR: Natanson, G. I.

TITLE: On the Theory of the Approximation of Functions by Linear
               Combinations of the Eigenfunctions of the Problem by Sturm-
               Liouville (K teorii priblizheniya funktsiy lineynymi kom-
               binatsiyami sobstvennykh funktsiy zadachi Shturma-Liyuvillya)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 2, pp.263-266
               (USSR)

ABSTRACT: The Sturm-Liouville problem: $U''(x) + [\lambda - B(x)] U(x) = 0$,
               $U'(0) - hU(0) = 0$, $U'(\pi) + HU(\pi) = 0$ is known to have an in-
               finite sequence of simple eigenvalues λ_0, λ_1, λ_2, ...
               These eigenvalues correspond to the eigenfunctions

               $U_0(x)$, $U_1(x)$, $U_2(x)$, ... In the equations written down

               above the function $B(x)$ is assumed and steady with respect
               to $[0, \pi]$; h and H are real, but not necessarily positive
               numbers. The function $U_n(x)$ can on $[0, \pi]$ be represented
               evenly by the asymptotic formula $U_n(x) = \cos nx + 0(n^{-1})$.

Card 1/2   The theory of the approximation of functions by linear com-

20-2-8/60

On the Theory of the Approximation of Functions by Linear Combinations of
the Eigenfunctions of the Problem by Sturm-Liouville

binations of the Sturm-Liouville functions has therefore
probably much in common with the theory of the approximation
of functions by trigonometrical polynominals. The present
paper formulates some new results in this direction. Alto-
gether 6 theorems and several conclusions resulting there-
from are given. There are 7 references, 2 of which are Soviet.

ASSOCIATION: Leningrad Pedagogical State Institute imeni A. I. Gertsen
(Leningradskiy gosudarstvennyy pedagogicheskiy institut im.
A. I. Gertsena)

PRESENTED: December 10, 1956, by V. I. Smirnov, Academician

SUBMITTED: December 4, 1956

AVAILABLE: Library of Congress

Card 2/2

N A T A N S O N, G. I.

AUTHOR: NATANSON, G.I.   20-1-7/42

TITLE: On S.M. Lozinskiy's Theorem (K teoreme S.M. Lozinskogo)

PERIODICAL: Doklady Akad.Nauk SSSR,   1957,Vol.117,Nr 1,pp.32-35 (USSR)

ABSTRACT: The author transforms a theorem of Lozinskiy [Ref.1] to series
expansions in terms of ultraspherical polynomials.
Theorem: Let $-\frac{1}{2} \leqslant \mathcal{d} \leqslant \frac{1}{2}$ and let $I_n(x) = I_n^{(\mathcal{d})}(x)$
be orthogonal normal polynomials on $[-1,1]$ with the weight
$p(x) = (1-x^2)^{\mathcal{d}}$. Let the matrix $\left\{\varphi_m^{(n)}\right\}$ $(n=0,1,2,\ldots;$
$m=0,1,2,\ldots,n)$ be so that $\varphi_n^{(\varphi)}[f,x]=\sum_{m=0}^{n}\varphi_n^{(n)}a_m I_m(x)$ for
each $f(x) \in C[-1,1]$ on $[-1+h, 1-h]$
tends uniformly to $f(x)$ for $n \to \infty$, whereby $h \in [0,1)$ and
$a_m = \int_1^{+1} f(t)I_m(t)p(t)dt$. For $f(x) \in C[-1,+1]$ the interpolation
polynomial $L_n[f;x]$ is formed which is identical with $f(x)$ in
the zeros $x_k^{(n)}$ of $I_n(x)$. Let $L_n[f;x]$ be decomposed in terms

Card 1/2   of the polynomials $I_m(x)$:

On S.M. Lozinskiy's Theorem

$$L_n [f;x] = \sum_{m=0}^{n-1} a_m^{(n)} I_m(x)$$

The following expression is formed:

$$L_n^{(\zeta)}[f;x] = \sum_{m=0}^{n-1} \rho_m^{(n)} a_m^{(n)} I_m(x)$$

Then it is uniformly on $[-1+h, 1-h]$:

$$\lim_{n \to \infty} L_n^{(\zeta)} [f;x] = f(x)$$

The proof is based on the lemma : If $T(x)$ is an even trigono-
metric polynomial of at most order n and if $\gamma > 0$, then it holds

$$\int_0^\pi |T(x)| dx \leq 6 (\pi\gamma)^\delta n^\delta \int_0^\pi \sin^\delta x |T(x)| dx \quad ,$$

where $\gamma = \left[\ln \frac{4}{3}\right]^{-1}$. There are 3 Soviet and 1 foreign references.

ASSOCIATION: Leningrad State Pedagogical Institute im.A. I. Gertsen   (Lenin-
gradskiy gosudarstvennyy pedagogicheskiy institut im.A.I. Gertsena)
PRESENTED: By V.I.Smirnov, Acdemician, May 23, 1957
SUBMITTED: May 21,1957
AVAILABLE: Library of Congress

Card 2/2

16.4200

36976
S/044/62/000/003/013/002
C111/C222

AUTHOR: Natanson, G. I.

TITLE: The generalization of the S. M. Lozinskiy theorem to non-
            triangular multiplier methods

PERIODICAL: Referativnyy zhurnal, Matematika, no. 3, 1962, 19,
            abstract 3B100. ("Uch. zap. Leningr. gos. ped. in-ta.
            im. A. I. Gertsena", 1961, 218, 141-155)

TEXT: The author follows S. M. Lozinskiy and calls the multi-
plier method

$$\left\{ \rho_0^{(n)}, \ \rho_1^{(n)}, \dots, \rho_{m_n}^{(n)} \right\} \quad (n = 0, 1, 2, \dots) \tag{1}$$

a Fejér method if

$$\lim_{n \to \infty} S_n^{(\varrho)} \left[f; x \right] = f(x)$$

holds for every $f(x) \in C_{2\pi}$ uniformly on the entire axis, where

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The generalization of the ...

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C111/C222

$$S_n^{(s)}[f; x] = S_0^{(n)} A + \sum_{k=1}^{m_n} S_k^{(n)} (a_k \cos kx + b_k \sin kx)$$

and A, a_k, b_k are the Fourier coefficients of $f(x)$. The author gives a known result of S. M. Lozinskiy (Matem. sb., 1944, 14, (56), 211) and considers trigonometric interpolation formulas with equi-distant nodes of the type

$$L_n[f; x] = A^{(n)} + \sum_{k=1}^{m_n} (a_k^{(n)} \cos kx + b_k^{(n)} \sin kx)$$

and the operator

$$L_n^{(Y)}[f; x] = S_0^{(n)} A^{(n)} + \sum_{k=1}^{m_n} S_k^{(n)} (a_k^{(n)} \cos kx + b_k^{(n)} \sin kx)$$

where

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The generalization of the ...

$$A^{(\ )} = (1/N_n) \sum_{i=1}^{N_n} f(x_i^{(n)}), \quad a_k^{(n)} = (2/N_n) \sum_{i=1}^{N_n} f(x_i^{(n)}) \cos k x_i^{(n)},$$

$$b_k^{(n)} = (2/N_n) \sum_{i=1}^{N_n} f(x_i^{(n)}) \sin k x_i^{(n)}, \quad x_i^{(n)} = 2i\pi/N_n.$$

$\{N_n\}$ is a sequence of natural numbers.

Proven are the theorems:

1. Assuming $N_n > m_n$, the formula

$$\left| f(x) - L_n^{(\varsigma)}[f; x] \right| \leq \left| f(x) - S_n^{(\varsigma)}[f; x] \right| + \left(2 + 2\pi \frac{m_n}{N_n} \right) \| S_n^{(\varsigma)} \| E_{N_n - m_n - 1}^T (f)$$

$$(2)$$

holds, where $\| S_n^{(\varsigma)} \|$ is the norm of $S_n^{(\beta)}[f; x]$ which acts as operator from $C_{2\pi}$ into $C_{2\pi}$; $E_{N_n - m_n - 1}^T (f)$ is the best approximation of $f(x)$ in

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The generalization of the ...

the metric of $C_{2\pi}$. If particularly (1) is a Fejér method and $\lim_{n \to \infty} (N_n - m_n) = + \infty$, then it follows from (2) that $L_n^{(\S)}[f, x]$ converges uniformly to $f(x)$ for every $f(x) \in C_{2\pi}$.

2. Assuming $N_n > m_n$, then

$$f(x) - S_n^{(\S)}[f; x] | \leq | f(x) - L_n^{(\S)}[f; x] | +$$

$$+ 2 \| L_n^{(\S)} \| E_{N_n - m_n - 1}^T (f) \tag{3}.$$

Here follows in particular: If the multiplier method (1) is such that $\lim_{n \to \infty} L_n^{(\S)}[f; x] = f(x)$ holds for every $f(x) \in C_{2\pi}$ uniformly on the entire exis, then this multiplier method is a Fejér method. Some examples are considered: the summation method by Jackson, the generalization thereof according to I. P. Natanson (Dokl. AN SSSR, 1952, 82, No. 3.

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The generalization of the ...

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337-339) and the method of the means by de la Vallée-Poussin. In addi-
tion, an earlier result of the author is generalized, i. e., the appli-
cation of the theorem by S. M. Lozinskiy to the algebraic case (Ref. Lit..
1956, 5659). Considered are Fourier series in terms of Jacobi polynomials
$I_n^{(\alpha, \beta)}(x)$ and the corresponding interpolation processes without the
restrictions $N_n = m_n = n$, $\alpha = \beta$, $\alpha \leq 1/2$, $\beta \leq 1/2$ which were used
previously; an estimate analogous to (2) is obtained. The author mentions
that he has not succeeded in obtaining the estimate analogous to (3) in
the algebraic case, even with a triangular multiplier-matrix and inter-
polation with Chebyshev nodes.

[Abstracter's note: Complete translation.]

Card 5/5

NATANSON, G.I.

      Approximation of cintinuous functions by partial sums of Fourier-
Hermite series. Isv. AN SSSR. Ser. mat. 28 no.6:1237-1250 N-D '64.
                                       (MIRA 18:2)

BABICH, V.M.; KAPILEVICH, M.B.; MIKHLIN, S.G.; NATANSON, G.I.;
    RIZ, P.M.; SLOBODETSKII, L.N.; SMIRNOV, M.M.;
    LYUSTERNIK, L.A., red.; YANPOL'SKIY, A.R., red.
    MIKHAYLOVA, T.N., red.

[Linear equations in mathematical physics] Lineinye urav-
neniia matematicheskoi fiziki. [By] V.M.Babich i dr. Moskva,
Izd-vo "Nauka," 1964. 368 p.   (MIRA 17:7)

AQAKHANOV, S.A.; NATANSON, G.I.

Approximation of a certain class of continuous functions by
partial sums of Fourier-Hermite series. Uch. zap. Kaz. un.
124 no.6:20-30 '64.   (MIRA 18:9)

AGAKHANOV, S.A.; NATANSON, G.I.

The Gibbs phenomenon in certain processes of summation of Fourier
series. Dokl. AN SSSR 162 no.6:1215-1218 Je '65.   (MIRA 18:7)

1. Leningradskiy gosudarstvennyy pedagogicheskiy institut. Sub-
mitted December 25, 1964.

L 1?29-66   EWT(d)   IJP(e)
ACC NR: AP6005481   SOURCE CODE: UR/0020/66/166/001/0009/0010

AUTHORS: Agakhanov, S. A.; Natanson, G. I.

ORG: Leningrad State Pedagogical Institute im. A. I. Gertsen (Leningradskiy
gosudarstvennyy pedagogicheskiy institut)

TITLE: Approximation of functions by Fourier-Jacobian sums

SOURCE: AN SSSR. Doklady, v. 166, no. 1, 1966, 9-10

TOPIC TAGS: Fourier series, Fourier equation, Jacobi polynomial, approximate
method, asymptotic property, convergent series

ABSTRACT: The authors develop a means of establishing the rate of convergence of
the partial sum of a series of Fourier functions $f(x)$ through the use of Jacobian
multinomials, $P_n^{\alpha,\beta}(x)$ are the Jacobian multinomials, orthogonal on $[-1,1]$ with
weight $p(x) = (1-x)^\alpha (1+x)^\beta$. The multinomials are normalized by the condition
$P_n^{\alpha,\beta}(1) = \Gamma(n+\alpha+1)/\Gamma(n+1)\Gamma(\alpha+1)$. The n-th partial sum of a series of Fourier
functions $f(x)$ is given by

$$S_n^{\alpha,\beta}(f;x) = \int f(t) K_n(t,x) p(t)\, dt.$$

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ACC NR: AP6003461

where

$$X_a(t,s) = \lambda_n \frac{P_{n+1}^{(\alpha,\beta)}(t) P_n^{(\alpha,\beta)}(s) - P_n^{(\alpha,\beta)}(t) P_{n+1}^{(\alpha,\beta)}(s)}{t - s}.$$

$$\lambda_n = \frac{2^{-\alpha-\beta}}{2n+\alpha+\beta+2} \frac{\Gamma(n+2)\Gamma(n+\alpha+\beta+2)}{\Gamma(n+\alpha+1)\Gamma(n+\beta+1)}.$$

Several classes of functions defined on the interval $[-1,1]$ are considered: W^r - the class of functions having an absolutely continuous derivative of order r-1, and a derivative of order $r > 0$, whose modulus of continuity is $\omega(f^{(r)}, \delta) \leqslant \omega(\delta)$, where $\omega(\delta)$ is a given real majorant of moduli of continuity; $H^\mu = W^\circ H_\mu$ - the class of functions satisfying the Lipshitz condition $\mu (0 \leq \mu \leq 1)$ with the constant 1; $W^r H^\mu$ - the class $W^r H_\omega$, where $\omega(\delta) = \delta^\mu$. Four theorems are stated giving means of approximating functions by means of Fourier-Jacobian sums in asymptotic formulations. Three combinations of bounds on α and β are considered. This paper was presented by Academician V. I. Smirnov on 5 May 1965. Orig. art. has: 14 equations.

SUB CODE: 12/   SUBM DATE: 03May65/   OTH REF: 002

Card 2/2

AVRUNINA, Anna Isaakovna; ARSEN'YEV, Nikolay Nikolayevich; RUSAKOV,
    Nikolay Gennadiyevich; TUMAYAN, Stepan Akopovich; KUKIN, G.N.
    retsenzent; KATANSON, I.A., retsenzent; KOPELEVICH, Ye.I., redaktor;
    MEDVEDEV, L.Ya., tekhnicheskiy redaktor

[General silk technology] Obshchaia tekhnologiia shelka. Moskva,
Gos. nauchno-tekhn. izd-vo M-va legkoi promyshl. SSSR, 1956.
241 p.   (MIRA 10:5)
        (Silk manufacture)